photodetector module P30232

SENS-TECH
SENSOR TECHNOLOGIES

1 description

The P30232 is a plug-and-play photodetector module, configured for photon counting. It comprises a selected 30 mm diameter end window photomultiplier tube with blue-green sensitive bialkali photocathode and ultra-low dark counts, a positive high voltage power supply, a high speed amplifier-discriminator, a counter and a micro controller. All are encapsulated within a cylindrical mumetal* case, providing a high level of immunity from the effects of external magnetic fields. Low voltage and signal output connections to the module are by axial flying leads.

2 application

- intended for ultra-low light measurements requiring single photon detection via an RS232 interface to a host PC.

3 features

- simplicity of operation
- minimal set up time
- compact cylindrical assembly
- electrostatic and magnetic shielding
- RS232 interface
- quartz window option
- 20 MHz count rate capability
- automatic dead time correction
- operates from +5 V supply
- preset discriminator level and HV
- fully enclosed high voltages
- only 600 mW total power dissipation (typical)
- discriminator threshold preset to -2 mV
- HV factory set for optimum operating voltage
- will operate with any PC running Windows® 95/98, with a free RS232 serial port

4 user manual

A manual giving detailed installation, start-up software and programming procedures is supplied with every package.

5 test data

Each module is supplied with test data including photocathode parameters and dark counts.

6 characteristics

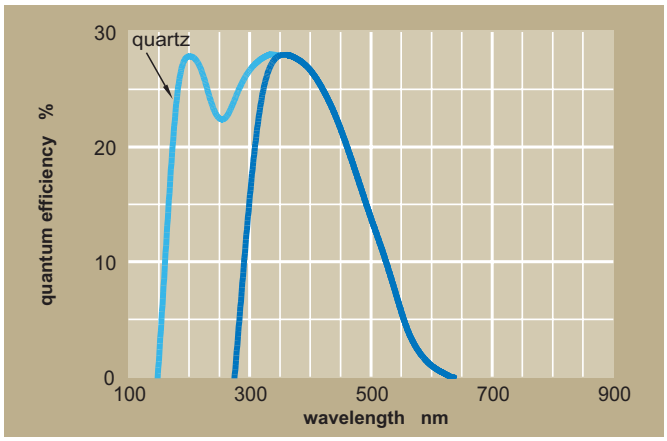
photocathode type	bialkali
photocathode active diameter	25 mm
spectral response range	280 to 630 nm, see curve
peak QE at 400 nm	28 %
output	RS232
baud rate	9600
parity	None
data bits	8
stop bits	1
control	see user manual
discriminator level	-2 mV
dark counts at 20 °C (typ.)	100 s^{-1}
(max.)	200 s^{-1}
power input at 10^6 s^{-1}	+5 V, 120 mA
warm up time	less than 2 s
ratings	
input voltage	+4.75 V to +5.25 V
temperature (operating)	+5 °C to +55 °C
(storage)	-40 °C to +55 °C
humidity (non-condensing)	93 % RH maximum at 30 ºC
weight	310 g
operating position	any
finish	matt black

7 user I/O connections

TTL input and output lines are available for control of the module and to command peripheral operations.

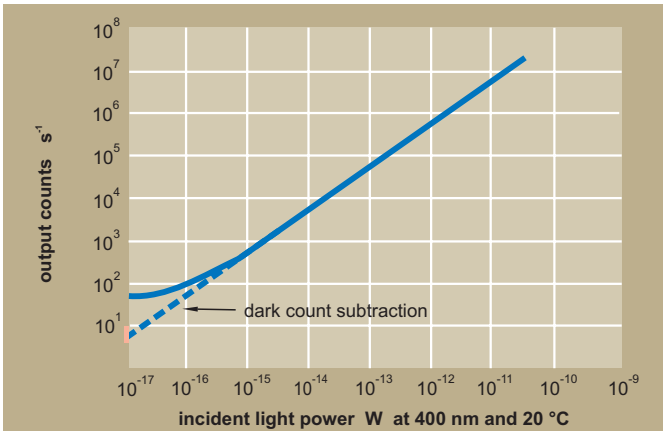
trigger input (grey)	start command for cycle defined by software
user output (violet)	start command for user applications. For example: activate shutter; busy indicator

8 photocathode spectral response

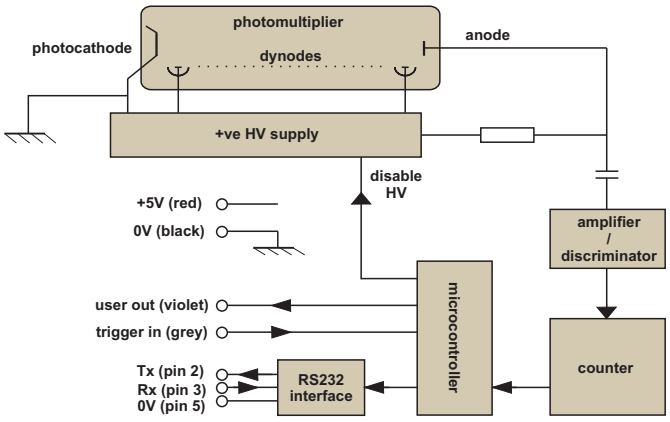


9 dynamic range

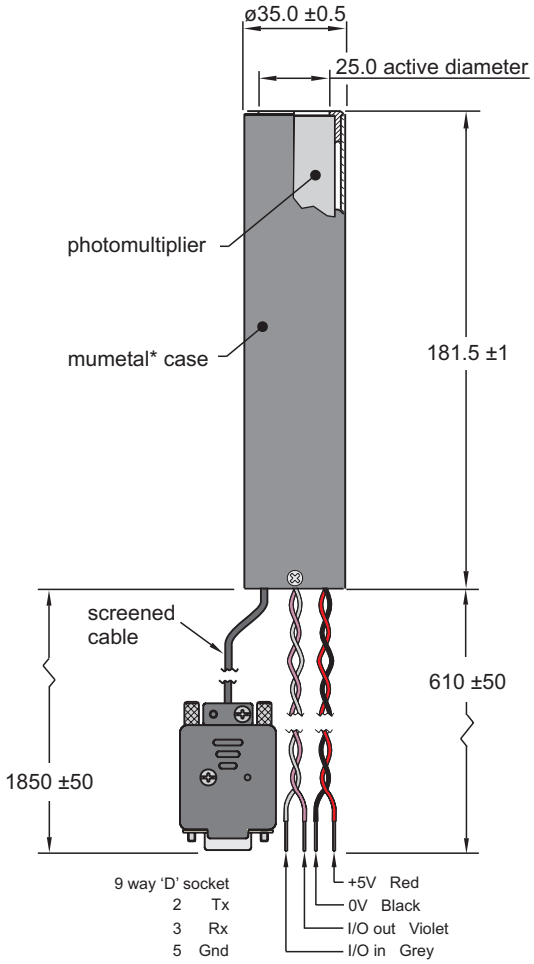
Typical counting sensitivity for P30232 at 400 nm. Note that automatic dead time correction has been applied at high count rates. The dynamic range can be further extended at low count rates by dark count subtraction in the software.



10 functional diagram



11 outline drawing mm



12 installation and operation

Each module is supplied with test data. Wherever possible installation should be carried out in subdued light.

Remove the protective cap from the module. Mount the module and make power input and signal connections.

Do not expose the photomultiplier tube photocathode to strong lights while the module is energised.

13 warning

No attempt must be made to repair or dismantle this product. High voltage used within the module may present an electric shock hazard.

Operation beyond the maximum ratings, or reversal of the input voltage may result in loss of performance or permanent damage to the product.

*mumetal is a registered trademark of Magnetic Shield Corporation

Sens-Tech Limited
Bury Street, Ruislip
Middx HA4 7TA, UK
tel: +44 (0) 1895 630771
fax: +44 (0) 1895 635953
e-mail: info@sens-tech.com

The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.

an ISO 9001 registered company

www.sens-tech.com

SENS-TECH
SENSOR TECHNOLOGIES

© Sens-Tech Limited, 2007